

Geometry Unit 8 Practice Test

Multiple Choice

Identify the choice that best completes the statement or answers the question.

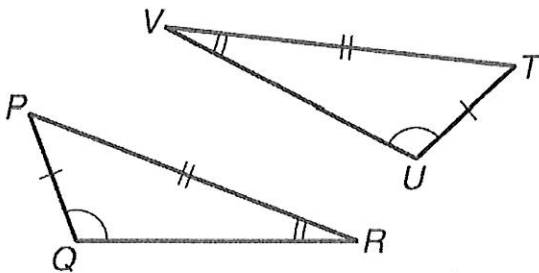
A

- 1 Which is the image of
- $(-4, 7)$
- rotated
- 180°
- about the origin?

A) $(4, -7)$ C) $(-4, 7)$
B) $(7, -4)$ D) $(-7, 4)$

F

- 2 Which CANNOT be used to justify the statement
- $\triangle PQR \cong \triangle TUV$
- ?



F) SSS
G) SAS

only 2 sides!

H) AAS
J) ASA

D

- 3 The diagonals of a rhombus are congruent. What is the best name for the figure?

A) parallelogram C) rectangle
B) rhombus D) square

G

- 4 Drake wants to reduce an 8-inch by 10-inch photo so that the width is 5 inches. What will be the measure of the length?

F) 4 in. H) 7 in.
G) $6\frac{1}{4}$ in. J) 16 in.

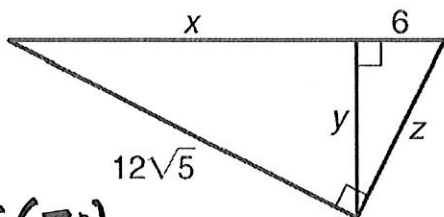
$$\frac{8}{5} = \frac{10}{x} \quad \frac{8x = 50}{8} \quad \frac{8x}{8} = \frac{50}{8}$$

Name: _____

ID: A

Short Answer

- ① Find x , y , and z .



$$z^2 = 6(30)$$

$$z^2 = 180$$

$$z = \sqrt{180}$$

$$z = 6\sqrt{5}$$

$$x = 24$$

$$y = 12$$

$$z = 6\sqrt{5}$$

$$(12\sqrt{5})^2 = x(x+6)$$

$$720 = x^2 + 6x - 720$$

$$-720$$

$$0 = x^2 + 6x - 720$$

$$0 = (x-24)(x+30)$$

$$x = 24 \text{ or } x = -30$$

$$y^2 = (24)(6)$$

$$y^2 = 144$$

$$y = 12$$

- ② A photographer positions a camera on a tripod to take a picture of a grain silo. The lens of the camera is 4 feet 6 inches from the ground. To get the full height of the silo, the camera had to be positioned 18 feet from the base of the silo. How tall is the grain silo?



$$18^2 = 4.5y$$

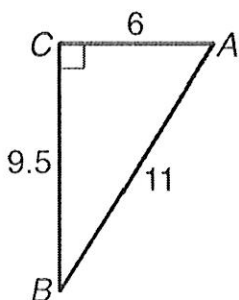
$$324 = 4.5y$$

$$y = 72$$

$$h = 72 + 4.5 = 76.5$$

$$76.5 \text{ ft}$$

- ③ Determine the value of $\cos B$ to the nearest hundredth.



$$0.86$$

$$\cos B = \frac{9.5}{11}$$

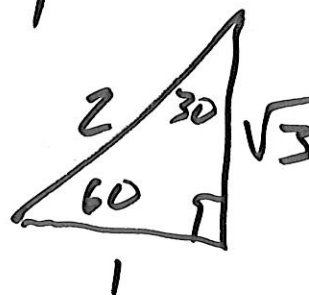
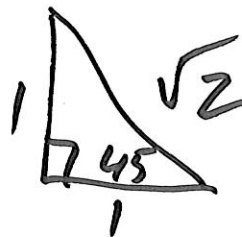
$$\cos B = 0.86$$

Name: _____

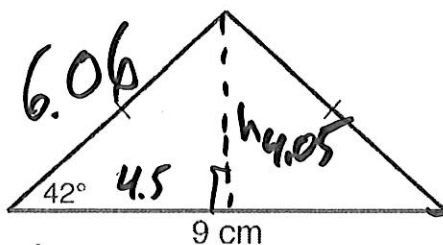
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- 4 Complete the chart. (Simplified radical)

	30°	45°	60°
sin	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
cos	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
tan	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$



- 5 Find the perimeter and area of the triangle. Round to the nearest tenth.



$$A = \frac{1}{2}(9)(4.05)$$

$$P = 21.1 \text{ cm}$$

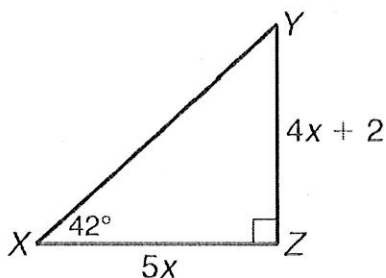
$$A = 18.2 \text{ cm}^2$$

$$\cos 42^\circ = \frac{4.5}{x}$$

$$x = \frac{4.5}{\cos 42^\circ}$$

$$\tan 42^\circ = \frac{h}{4.5} \quad h = 4.5 \tan 42^\circ$$

- 6 Find YZ. Round to the nearest unit.



$$18 \quad (5x) \tan 42^\circ = \frac{4x+2}{5x} (5x)$$

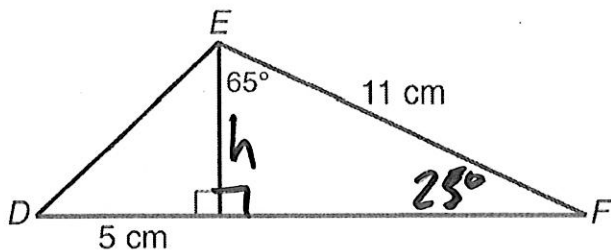
$$4.5x = 4x + 2$$

$$.5x = 2$$

$$x = 4$$

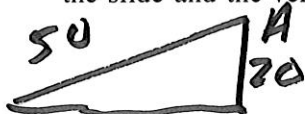
$$YZ = 4(4) + 2 \\ 16 + 2$$

- 7 Find $m\angle D$ to the nearest degree.



$$\begin{aligned} \cos 65^\circ &= \frac{h}{11} \\ h &= 11 \cos 65^\circ \\ h &= 4.649 \\ \tan D &= \frac{4.649}{5} \\ m\angle D &= \tan^{-1}\left(\frac{4.649}{5}\right) \end{aligned}$$

- 8 The length of a slide at a water park is 50 feet from the top of the slide to ground level. The top of the slide is 20 feet above the ground. What is the approximate measure of the angle formed by the top of the slide and the vertical support to the ground? Round to the nearest degree.



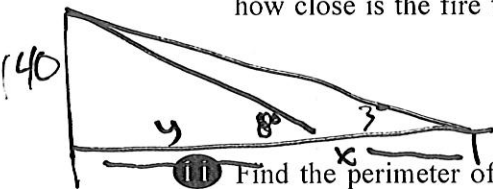
$$\begin{aligned} \cos A &= \frac{20}{50} \\ m\angle A &= \arccos\left(\frac{20}{50}\right) \end{aligned}$$

- 9 A plane is flying at a constant altitude of 30,000 feet and a constant speed of 750 miles per hour. A fisher on a lake spots the plane headed in his direction at an angle of elevation of 6° . To the nearest minute, how much time will pass before the plane is directly over the fisher?



$$\begin{aligned} \tan 6^\circ &= \frac{30,000}{h} \\ h &= \frac{30,000}{\tan 6^\circ} = 285,430 \text{ ft} \\ t &= \frac{d}{r} = \frac{285,430}{750} = 0.38 \text{ hrs} \end{aligned}$$

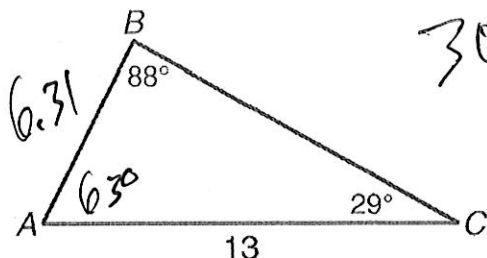
- 10 A forest ranger in a 140-foot-tall observation tower sees a fire moving in a direct path toward a lake. The angle of depression to the fire is 3° . The angle of depression to the lake is 8° . To the nearest foot, how close is the fire to the lake?



$$1675 \text{ ft}$$

$$\begin{aligned} \tan 3^\circ &= \frac{140}{x} \\ x &= \frac{140}{\tan 3^\circ} \\ \tan 8^\circ &= \frac{140}{y} \\ y &= \frac{140}{\tan 8^\circ} \end{aligned}$$

- 11 Find the perimeter of $\triangle ABC$ to the nearest tenth.



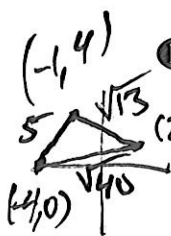
$$30.9$$

$$\begin{aligned} \frac{AB}{\sin 29^\circ} &= \frac{13}{\sin 88^\circ} \\ AB &= \frac{13 \sin 29^\circ}{\sin 88^\circ} \end{aligned}$$

$$\begin{aligned} \frac{BC}{\sin 63^\circ} &= \frac{13}{\sin 88^\circ} \\ BC &= \frac{13 \sin 63^\circ}{\sin 88^\circ} \end{aligned}$$

$$AB = 6.31$$

$$BC = 11.59$$



- 12 The coordinates of the vertices of $\triangle JKL$ are $J(-1,4)$, $K(2,2)$, and $L(-4,0)$. Find the measure of the smallest angle of the triangle. Round to the nearest degree.

$$40 = 13 + 25 - 2(5)\sqrt{13} \cos C$$

$$2 = -10\sqrt{13} \cos C$$

$$\cos C = \frac{2}{-10\sqrt{13}} = -0.0169 \text{ (largest)}$$

$$35^\circ$$

$$13 = 25 + 40 - 2(5)\sqrt{40} \cos A$$

$$13 = 65 - 10\sqrt{40} \cos A$$

$$-52 = -10\sqrt{40} \cos A$$

$$\cos A = \frac{-52}{-10\sqrt{40}}$$

- 13 Identify another vector that is parallel to but NOT equal to the resultant vector of $\langle -2, 7 \rangle + \langle -3, 3 \rangle$.

$$\langle 10, -20 \rangle$$

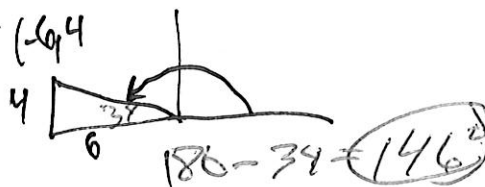
$$\text{slope} = -2$$

- 14 Find the direction of $\langle -6, 4 \rangle$. Round to the nearest degree.

$$\tan A = \frac{4}{6}$$

$$m\angle A = \arctan\left(\frac{4}{6}\right)$$

$$m\angle A = 34^\circ + 90^\circ = 124^\circ$$

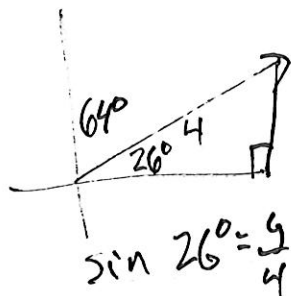


- 15 A skiff leaves a dock and heads toward a house across the river. The house is at a bearing of $N 64^\circ E$ from the dock. There is a 1 mile per hour current blowing due east. Determine the speed and direction the skiff would have to maintain so that the skiff's actual speed is 4 miles per hour and it is moving directly toward the house. Round the speed to the nearest whole number and the direction to the nearest degree.

$$3 \text{ mph}$$

$$N 56^\circ E$$

$$\text{Current} = \langle 1, 0 \rangle$$



$$\sin 26^\circ = \frac{1.75}{4}$$

$$y = 4 \sin 26 = 1.75$$

$$x = 4 \cos 26 = 3.60$$

$$\langle 1.75, 3.60 \rangle$$

$$\langle 3.60, 1.75 \rangle$$

$$\text{Original} = \langle 1.75, 3.60 \rangle - \langle 1, 0 \rangle = \langle 0.75, 3.60 \rangle$$

$$\langle 3.60, 1.75 \rangle - \langle 1, 0 \rangle = \langle 2.60, 1.75 \rangle$$

